

**BUREAU OF INDIAN STANDARDS**

DRAFT FOR COMMENTS ONLY

*(Not to be reproduced without permission of BIS or used as an Indian Standard)*

भारतीय मानक मसौदा  
वेजिटेबल टैन्ड हाइड्रोलिक चमड़ा - विशिष्टि

*(IS 581 का चौथा पुनरीक्षण)*

*Draft Indian Standard*

**Vegetable tanned hydraulic  
Leather — specification**

*(Fourth Revision of IS 581)*

(ICS 59.140.20)

**Leather, Tanning Materials and Allied Products Sectional  
Committee, CHD 17**

**Last Date for Comments: 19-01-2024**

**Leather, Tanning Materials and Allied Products, Sectional Committee CHD 17**

**FOREWORD**

*(Formal clause will be added later)*

Vegetable tanned hydraulic leather is used for marking flange leather, cups and pump leather, hydraulic rams, leather rings and for all kinds of gland packing used in hydraulic system of operations.

This standard was first published in 1954 and subsequently revised in 1962 and 1976. This revision has been taken up in order to bring out the standard in latest style and format of the Indian Standards. The relevant clauses have been added and the references have been updated.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Draft Indian Standard*

# VEGETABLE TANNED HYDRAULIC LEATHER — SPECIFICATION

*(Third Revision)*

## 1 SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test of vegetable tanned hydraulic leather.

**1.1.1** This standard does not include leather intended for oil seals covered by IS 3020.

## 2 REFERENCE

The Indian standards listed Annex A. contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Indian standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

## 3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1640 shall apply.

## 4 REQUIRMENTS

### 4.1 Raw Material

The material shall be of good quality wet salted buffalo, ox or cow hides having good substance.

### 4.2 Tanning

The hide shall be tanned with natural vegetable tanning material or their extracts or either of these in combination with syntans. The tanning may be conducted either solely in pits, or in pits and then in drums. The leather shall be fully tanned. A cut made by knife shall be smooth, showing that the inside fiber is compact.

#### 4.2.1 Fungicidal Additive

At the end of tanning operation and before shall be effective and non-toxic. The material shall not show any growth of mildew when tested in accordance with LB:2 of IS 6191.

### 4.3 Finishing

The material shall be sammed and shaved on the flesh side to the required thickness and then the grain scoured thoroughly. The material shall be suitably dressed with oils or fats to make the finished leather suitable for being moulded into the required shape and design.

### 4.4 Chemical Requirements

The leather shall comply with the chemical requirements given in Table 1.

**TABLE 1 Chemical Requirements for Vegetable Tanned Hydraulic Leather**

*(Clauses 4.4 and 5)*

SI No.	Characteristic	Requirements	Method of Test in IS 582
(1)	(2)	(3)	(4)

i).	Total ash, percent by mass, <i>Max</i>	3.0	LC:3/Part 3
ii).	Solvent extractable substance, percent by mass, <i>max</i>	7.0	LC:4/Part 14
iii).	Water soluble matter, percent by mass, <i>Max</i>	18.0	LC:6/Part 2
iv).	Insoluble ash, percent by mass, <i>Max</i>	2.0	LC:8/Part 3
v).	Metal content (as metal oxide), percent by mass, <i>Max</i>	1.0	LC:10/Part 10 Sec 1 & LC:11
vi).	<i>pH</i> of water solubles, <i>Min</i>	3.5	LC:18/ Part 9
vii).	Differential number, <i>Max</i>	0.6	
viii).	Degree of tannage, <i>Min</i>	50	LC: 21

Note — The calculations for SI No. (i) to (v) shall be done on zero percent moisture basis. The moisture content shall be determined in accordance with LC:1 or Part 1 of IS 582.

#### 4.5 Physical Requirements

The material shall also comply with the physical requirements given in Table 2.

**Table 2 Physical Requirements for Vegetable Tanned Hydraulic Leather**

(Clause 4.5 and 5)

SI No.	Characteristic	Requirement	Method of test in IS 5914
(1)	(2)	(3)	(4)
i.	Shrinkage temperature, <i>Min</i>	75 °C	LP: 10
ii.	Water absorption, percent increase in mass, <i>Max</i> :		
	a) in 30 minutes	45	LP : 11
	b) In 2 hours	50	
	c) In 24 hours	55	
iii.	Resistance to Crackiness	Shall not crack Mandrel No 1	LP : 13/ Part 7
iv.	Pipiness of the grain	Shall not show signs of permanent loosening of the grain in the form of wrinkles	—
v.	Thickness	As agreed, to between the purchaser and the supplier with a tolerance of $\pm 0.2$ mm	LP:2
vi.	Tensile strength, kg/cm <sup>2</sup> , <i>Min</i>	210	LP: 6/Part 8

^Leather shall not be raggy and spongy

## 5 TESTS

The leather shall satisfy the requirements given in Table 1 and Table 2 when tested in accordance with the methods referred to in col 4 of the tables.

## 6 PACKING AND MARKING

### 6.1 Packing

The lather shall be packed as agreed to between the purchaser and the supplier.

### 6.2 Marking

The packages of leather shall be marked with the name of the manufacturer; recognized trade-mark if any; and number of pieces.

#### 6.2.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 7 SAMPLING

The scale of sampling and criteria for conformity of the material to the standard shall be as prescribed in IS 5868.

### ANNEX A

(Clause 2)

#### LIST OF REFERRED INDIAN STANDARD

<i>IS</i>	<i>Title</i>
IS 582	Methods of chemical testing of leather ( <i>First Revision</i> )
Part 1:2017/ ISO 4684 : 2005	Determination of volatile matter ( <i>Second Revision</i> )
Part 2 : 2024/ ISO 4098 : 2018	Determination of Water-Soluble Matter, Water-Soluble Inorganic Matter and Water-Soluble Organic Matter ( <i>First Revision</i> )
Part 3 : 2017 ISO 4047 : 1977	determination of sulphated total ash and sulphated water - Insoluble ash ( <i>Second Revision</i> )
Part 9 : 2022 ISO 4045 : 2018	Determination of pH and difference figure
Part 10/Sec 1 : 2022	10 Determination of chromic oxide content Section 1 Quantification by titration
Part 14 : 2022	Determination of matter soluble in dichloromethane and free fatty acid content
IS 1640 : 200	Glossary of terms relating to hides, skins and leather ( <i>First Revision</i> )
IS 3020 : 1976	Specification for leather for oil seals ( <i>First Revision</i> )
IS 5868 : 1983	Method of sampling for leather ( <i>First Revision</i> )
IS 5914	Methods of Physical Testing of Leather
Part 7 : 2023 ISO 3378 : 2002	Determination of resistance to grain cracking and grain crack index

Part 8:2023  
ISO 3376: 2020  
IS 6191 : 1971

Determination of tensile strength and percentage elongation

Micro - Biological colour fastness and microscopical tests for leather